

### ABSTRACT OF THE DISCLOSURE

Expandable and contractible buoyancy modules are assembled to the risers of a deepwater exploration spar or other offshore structure to provide an upwardly directed buoyancy force to offset at least a portion of the weight of the riser. The buoyancy modules have a fabricated pressure tight expandable and contractible envelope composed of rubber or rubber-like material which is mounted onto a tubular member having a central passage for receiving the riser to be supported. The tubular member projects beyond the respective upper and lower ends of the envelope and defines upper and lower riser joint connectors and buoyancy module travel stops which secure the buoyancy module to the riser and provide for force transmission from the buoyancy module to selected locations along the length of the riser or to the upper end of the riser. The envelope is provided with at least one access port through which an inflation medium such as a gas or an uncured polymer can be added to control inflation of the envelope and through which liquid ballast is added or removed for ballast control.